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EXAMINER

ZARROLI, MICHAEL C

ART UNIT

PAPER NUMBER

2839

DATE MAILED: 04/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/049,950

Applicant(s)

SCHMIDT ET AL.

Examiner

Michael C. Zarroli

Art Unit

2839

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-18 and 21-25 is/are rejected.
- 7) ☒ Claim(s) 14, 19, 20, 26 and 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

1. Objections have been overcome.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the contact element parts located on either side of the bent or kinked sections are movable relative to each other must be shown or the feature(s) canceled from the claim(s).

No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Response to Arguments***

3. Applicant's amendments filed 3/11/04, with respect to the claim rejections under 102e have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new grounds of rejection can be made in view of new art.

4. The indicated allowability of claims indicated in the previous office action is withdrawn in view of the newly discovered references. Rejections based on the newly cited reference(s) follow.

***Claim Objections***

5. Claims 12-17 and, 24 objected to because of the following informalities: They should be renumbered to be after and near the claims from which they depend. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

7. Claim 8 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The examiner is not sure what the applicant is claiming. Is the bent or kinked section in a middle portion of the contact element and the parts of the contact element on either side of the bent or kinked part movable relative to each other? The examiner will assume as much.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country, in public use, or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-3, 5-6, 12-13, 16-17 and, 24 rejected under 35 U.S.C. 102(e) as being clearly anticipated by previously cited Lai et al.

Lai discloses an electrical connector comprising one or more connector modules (figures 2 or 4), each said connector module comprising at least one contact support (14) and a multiplicity of contact elements (18) connected to the contact support and extending along the surface thereof, the contact elements being connected to the contact supports by having plastics material injection molded around part thereof (col. 2 lines 47-51), wherein the contact supports and the contact elements being supported by the same are connected to each other in non-releasable manner (figures 2 or 4).

Regarding claims 2-3 Lai discloses that metal strips constitute the contact elements (figures 1 & 3 at 18 & 28) and, the front ends of the contact supports are portions thereof without contact elements (e.g. fig. 2 at 142).

Regarding claims 5-6 Lai discloses that the contact elements project beyond the rear end of the contact supports (e.g. fig. 2 at 186) and, the contact elements have a bent or kinked section (186) in the portion thereof extending beyond the rear end of the contact supports.

Regarding claims 12-13 Lai discloses that the contact supports have groove like recesses at those locations where contact elements are to be provided (claim 1 lines 60-66).

Regarding claims 16-17 Lai discloses that the assembled state of the electrical connector (e.g. fig. 2), a predetermined section of the connector modules (at 142 or 14) is inserted between other components (16, 162) of the electrical connector and held there and, said predetermined section of the connector modules and other components of the electrical connector receiving said section there between have spaces (unnumbered fig. 2) provided.

Regarding claim 24 Lai discloses soldering the connector to a circuit board (fig. 2). The method of forming the device (soldering using PSGA technology) is not

germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

10. Claims 7, 9-10 rejected under 35 U.S.C. 102(b) as being clearly anticipated by previously cited Marsh et al.

Marsh discloses an electrical connector (202) comprising one or more connector modules, each said connector module comprising at least one contact support (214, 216, 218) and a multiplicity of contact elements (250, 252, 254) connected to the contact support and extending along the surface thereof (fig. 18), the contact elements projecting beyond the rear end of the contact supports (fig. 23), and the contact elements have a bent or kinked section (figures 19A & 19B) in the portion thereof extending beyond the rear end of the contact supports wherein the contact supports and the contact elements being supported by the same are connected to each other in non-releasable manner (figures 23 & 24) , and wherein the bent or kinked sections of the contact elements in the assembled state of the electrical connector, come to lie in a cavity contained in said connector (unnumbered fig. 23).

Regarding claim 9 Marsh discloses that the contact elements, in the region in which they are supposed to establish contact with an associated contact element,

have one or more protuberances or bulges acting as contact locations (e.g. figure 19A at 250d).

Regarding claim 10 Marsh discloses that the portions of the contact elements having said protuberances or bulges are designed to be resilient (unnumbered fig. 23).

11. Claim 18 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Ikesugi et al.

Ikesugi discloses an electrical connector comprising a connector module (either in fig. 2), each said connector module comprising at least one contact support (222 or 234) and a multiplicity of contact elements (225 or 235) connected to the contact support and extending along the surface thereof, wherein the contact supports and the contact elements being supported by the same are connected to each other in non-releasable manner (fig. 1), wherein the connector module, in the assembled state of the electrical connector, is movable relative to other components of the electrical connector (fig. 3).

12. Claims 21-23 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Masami et al.

Massami discloses an electrical connector with a connector module, each said connector module comprising at least one contact support (23) and a multiplicity of



contact elements (7, 10) connected to the contact support (fig. 4) and extending along the surface thereof (fig. 1), the connector module is individually enclosed on the sides thereof by parts of a housing (5, 6) and the housing parts enclosing the connector modules project beyond the front end of the connector modules (fig. 4), wherein the contact supports and the contact elements being supported by the same are connected to each other in non-releasable manner (fig. 4), and wherein the housing parts projecting beyond the front end of the connector modules are provided with tapers (unnumbered figures 4 & 7) suitable for centering with respect to the housings of other electrical connectors (fig. 5).

Regarding claims 22-23 Massami discloses (fig. 5) that the electrical connector mates with a complementary second electrical connector only after having been pre-centered and, the pre-centering is effected by centering of housing parts meeting each other there before.

### ***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Lai et al as applied to claims 1 and 3 above, and further in view of Naitoh.

Lai does not disclose that the front ends of the contact supports are provided with tapers.

Naitoh discloses contact supports (1) with tapers (unnumbered fig. 2).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify Lai with tapering at the mating end of the contact supports as taught by Naitoh. The motivation/suggestion for doing so would have been to prevent bending of the contacts. In figure 2 of Lai the contacts are tapered and during mating the ends of the contacts exposed above the support could snag and bend.

15. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Marsh et al as applied to claim 7 above, and further in view of Lai et al.

Marsh does not disclose that the contacts are connected to the supports by plastic injection molding.

Lai discloses contacts affixed in part to contact supports by plastic injection molding (col. 3 lines 25-34).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use injection molding to affix the contacts of Marsh to

the supports as taught by Lai. The motivation/suggestion for doing so would have been that injection molding is a ubiquitous and common method for affixing contacts. Using this method is one of the least expensive alternatives.

16. Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Ikesugi et al as applied to claim 18, and further in view of Lai et al.

Ikesugi does not disclose that the contacts are injection molded to the supports.

Lai discloses contacts affixed in part to contact supports by plastic injection molding (col. 3 lines 25-34).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use injection molding to affix the contacts of Ikesugi to the supports as taught by Lai. The motivation/suggestion for doing so would have been that injection molding is a ubiquitous and common method for affixing contacts. Using this method is one of the least expensive alternatives.

17. Claim 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Massami et al in view of Swamy et al.

Massami disclose that an electrical connector comprising a connector module (1), said connector module comprising at least one contact support (23) and a multiplicity of contact elements (7, 10) connected to the contact support and extending along the surface thereof (fig. 1), wherein the contact supports and the

contact elements being supported by the same are connected to each other in non-releasable manner (fig. 4), and wherein said connector is designed (fig. 6) to be soldered to a circuit board (fig. 5).

Massami does not disclose that the soldering is done using BGA technology.

Swamy discloses (fig. 2A) BGA technology to solder a connector to a circuit board (col. 2 lines 28-34).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use BGA technology to solder the connector of Massami as taught by Swamy. The motivation/suggestion for doing so would have been to permit easier self-centering during reflow process (Swamy, col. 2 lines 55+).

### ***Allowable Subject Matter***

18. Claims 14, 19-20 and, 26-27 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. Claim 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mosquera et al and, Olson teach contact supports, tapered ends, and mating connectors.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Zarroli whose telephone number is 571-272-2101. The examiner can normally be reached on 7:30 to 3:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Feild can be reached on (571) 272-2800 ext 39. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/049,950  
Art Unit: 2839

Page 13

A handwritten signature in cursive script, appearing to read "Michael C. Zarroli".

Michael C. Zarroli  
Primary Examiner  
Art Unit 2839

MCZ  
MCZ